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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,968	02/17/2005	Petrus Maria De Greef	NL02 0769 US	2948

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EXAMINER	
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ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
05/05/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/524,968	DE GREEF ET AL.	
	Examiner	Art Unit	
	DENNIS P. JOSEPH	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2/17/2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to amendments filed in application No. 10/524,968 on October 27, 2008. Claims 1-11 are pending and have been examined.

Continued Examination

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 27, 2008 has been entered.

Claim Rejections – 35 USC § 103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 103(a) that forms the basis for the rejections under this section made in this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-3, 5 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dalfsen et al. (US 2001/0005186 A1) in view of Kwak et al. (6,166,781), further in view of Zlotnick (US 6,522,784 B1)

Van Dalfsen teaches in Claim 1:

A video circuit for processing video signals which show images on a display panel with linear light transition ([0005]), comprising a gamma correction circuit ([0037]), a quantizer (Figure 3, quantizer 304, [0046]) and a sub-field generator circuit ([0001], Figure 3, 306 and Column 3, Table 1 shows the combinations), but

Van Dalfsen does not explicitly teach that the circuit is "wherein a coarse adjustment of the quantization is made in a first random-access memory and a fine adjustment of the quantization is made in a second random-access memory." He does not teach of a two-stage adjustment process done with LUTs.

However, in the same field of endeavor, display driving methods, Kwak teaches and shows in Figure 7, "After step 106, multiplier 90 multiplies the second data read from second LUT 86 with the lower bits, and outputs the product to adder 88 (step 108). After step 108, adder 88 adds the first data from first LUT 84 to the output from multiplier 90, and outputs the sum to an output port OUT as digital corrected data." (Kwak, Column 9, Lines 12-16) Figure 7 shows the first LUT 84 and the second LUT 86. 86 multiplies and makes a coarse adjustment and the 84 adds and makes a fine adjustment.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate two stage adjustment process as taught by Kwak with Van Dalfsen's display device by implementing the two LUTs to quantize the signal with the motivation that "RAM is typically more complicated and larger than ROM, making look up table size even more critical in programmable systems." (Kwak, Column 1, Lines 65-67) This is important because "Larger look up tables make integration more difficult and increases system costs" (Kwak, Column 1, Lines 61-62) and it also reduces the depth and width of the LUT leading to less output error.

Kwak does not explicitly teach of the specifics of the pixel data which is quantized, such as the "absolute values associated with neighboring pixels," which are used to determine a "quantization error determined at a current pixel value." As discussed above, he does teach of making adjustments/quantizing the data as discussed above.

However, using absolute values in comparing the neighboring pixel data to determine the quantization error, QE, of the current pixel, is well known in the art and is commonly used to calculate the QE.

To emphasize, in the same field of endeavor, quantization and compression/reordering of image data, Zlotnick teaches of using quantized images and reordering pixels by value and location and discloses this step in Figure 2. Furthermore, he discloses the absolute difference in position of

the pixels values of neighboring pixels is used in the quantization process for rendering the image data, (Zlotnick, Column 6, Lines 1-43)

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to use the rendering process, as taught by Zlotnick, with Van Dalfsen's correction circuit, as modified by Kwak, with the motivation that by quantizing properly, an efficient compression can be had, reducing the size of the image data, saving space and also allowing for a sharper image, (Zlotnick, Column 1, Lines 50-56)

Van Dalfsen teaches in Claim 2:

A video circuit for processing video signals which display images on a display panel with linear light transition ([0005]), comprising a gamma correction circuit ([0037]), a quantizer (Figure 3, quantizer 304, [0046]) and a sub-field generation circuit ([0001], Figure 3, 306 and Column 3, Table 1 shows the combinations), but

Van Dalfsen does not explicitly teach that the circuit is "wherein most significant bits are quantized in a first random-access memory and least significant bits are quantized in a second random-access memory."

However, in the same field of endeavor, display driving methods, Kwak teaches, "An N-bit digital signal is input via an input port IN. The first LUT 20 stores first data, and reads the stored data using U upper bits (i.e., most significant bits) of the N-bit digital input signal as an address."

(Column 5, Lines 3-6) Figure 2 shows the first LUT 20 and this is for the most significant bits., "Multiplier 24 multiplies the M-bit second data, (here, M is varied according to the allowable error) read from the second look up table 22, with the D lower bits (i.e., least significant bits) of the N-bit digital input signal, and outputs the product to adder 26. (Column 5, Lines 21-24) Figure 2 shows second LUT 22.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate two stage bit process as taught by Kwak with Van Dalfsen's display device by implementing the two LUTs to quantize the signal with the motivation that "RAM is typically more complicated and larger than ROM, making look up table size even more critical in programmable systems." (Kwak, Column 1, Lines 65-67) This is important because "Larger look up tables make integration more difficult and increases system costs" (Kwak, Column 1, Lines 61-62) and it also reduces the depth and width of the LUT leading to less output error.

Kwak does not explicitly teach of the specifics of the pixel data which is quantized, such as the "absolute values associated with neighboring pixels," which are used to determine a "quantization error determined at a current pixel value." As discussed above, he does teach of making adjustments/quantizing the data as discussed above.

However, using absolute values in comparing the neighboring pixel data to determine the quantization error, QE, of the current pixel, is well known in the art and is commonly used to calculate the QE.

To emphasize, in the same field of endeavor, quantization and compression/reordering of image data, Zlotnick teaches of using quantized images and reordering pixels by value and location and discloses this step in Figure 2. Furthermore, he discloses the absolute difference in position of the pixels values of neighboring pixels is used in the quantization process for rendering the image data, (Zlotnick, Column 6, Lines 1-43)

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to use the rendering process, as taught by Zlotnick, with Van Dalfsen's correction circuit, as modified by Kwak, with the motivation that by quantizing properly, an efficient compression can be had, reducing the size of the image data, saving space and also allowing for a sharper image, (Zlotnick, Column 1, Lines 50-56)

Van Dalfsen teaches in Claim 3:

A video circuit for processing video signals which show images on a display panel with linear light transition ([0005]), comprising a gamma correction means ([0037]), a quantization means (Figure 3, quantizer 304, [0046]) and a sub-field generation means ([0001], Figure 3, 306 and Column 3, Table 1 shows the combinations), but

Van Dalfsen does not explicitly teach that the circuit is "wherein the quantization means is a random-access memory."

However, in the same field of endeavor, display driving methods, Kwak teaches in Figures 2 and 7 to use LUTs (read as memory) to replace the quantizer to alter the properties of the signals. (Column 9, Lines 11-16 and Column 5, Lines 21-24).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the quanitzer as a LUT as taught by Kwak with Van Dalfsen's display device by replacing the quantizer with a LUT with the motivation that "Larger look up tables make integration more difficult and increases system costs. In addition, a programmable system for gamma correction typically uses RAM such as SRAM or DRAM for the look up table, instead of ROM. However, RAM is typically more complicated and larger than ROM, making look up table size even more critical in programmable systems. (Kwak, Column 1, Lines 65-67) The LUT has physical advantages in terms of size and would useful to utilize as the quantization means.

Kwak does not explicitly teach of the specifics of the pixel data which is quantized, such as the "absolute values associated with neighboring pixels," which are used to determine a "quantization error determined at a current pixel value." As discussed above, he does teach of making adjustments/quantizing the data as discussed above.

However, using absolute values in comparing the neighboring pixel data to determine the quantization error, QE, of the current pixel, is well known in the art and is commonly used to calculate the QE.

To emphasize, in the same field of endeavor, quantization and compression/reordering of image data, Zlotnick teaches of using quantized images and reordering pixels by value and location and discloses this step in Figure 2. Furthermore, he discloses the absolute difference in position of the pixels values of neighboring pixels is used in the quantization process for rendering the image data, (Zlotnick, Column 6, Lines 1-43)

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to use the rendering process, as taught by Zlotnick, with Van Dalfsen's correction circuit, as modified by Kwak, with the motivation that by quantizing properly, an efficient compression can be had, reducing the size of the image data, saving space and also allowing for a sharper image, (Zlotnick, Column 1, Lines 50-56)

As per Claim 5:

A video circuit (Van Dalfsen, [0005]) as claimed in claim 3, but

Van Dalfsen does not explicitly teach that the circuit is "wherein the random-access memory is said gamma correction means."

However, in the same field of endeavor, display driving methods, Kwak teaches "A conventional gamma correction apparatus uses a look up table stored in a memory such as a RAM or ROM."

(Column 1, Lines 48-50). The RAM is used to assist in the process, to the point where it considered to be the gamma correction means.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the gamma correction circuit as a RAM as taught by Kwak with Van Dalfsen's display device with the motivation that "Larger look up tables make integration more difficult and increases system costs. In addition, a programmable system for gamma correction typically uses RAM such as SRAM or DRAM for the look up table, instead of ROM. However, RAM is typically more complicated and larger than ROM, making look up table size even more critical in programmable systems. (Column 1, Lines 65-67) The LUT has physical advantages in terms of size.

Van Dalfsen teaches in Claim 7:

A video circuit as claimed in claim 3, wherein the random-access memory is said sub-field generation means. (Figure 3, [0046], "The image display unit has a look up table 306 containing the available levels and specifying what combinations of the ten available sub-fields are to be used for the respective levels." As interpreted, the random-access memory provides for subfield generation means.)

5. **Claims 4 and 6** rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dalfsen et al. (US 2001/0005186 A1), Kwak et al. (6,166,781) and Zlotnick (US 6,522,784 B1) as applied to claim 3, above, and further in view of Okada et al. (US 5,854,799)

As per Claim 4:

A video circuit (Van Dalfsen, [0005]) as claimed in claim 3, but

Van Dalfsen and Kwak do not explicitly teach that the circuit is "wherein the random-access memory additionally performs dequantization"

However, in the same field of endeavor, display driving methods, Okada teaches "The dequantizer 107 performs dequantization on the variable-length decoded data based on quantization threshold values stored in a quantization table, stored in the second ROM 111, to attain DCT (Discrete Cosine Transform) coefficients. (Okada, Column 3, Lines 8-12). The memory provides for dequantization means.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the dequantizer as a memory as taught by Okada with Van Dalfsen's display device by implementing the dequantizer after the gamma correction circuit and quantizer with the motivation that "Based upon the dequantized data, a direct current error detector checks macroblocks by macroblock to determine if an erroneous macroblock exists. Each slice of a picture is checked. If an erroneous macroblock is found, an error processing circuit replaces the erroneous macroblock with a corresponding macroblock from a preceding picture." (Okada, Columns 3-4, Lines 66-4) By using the dequantizer, it can be determined if an error was made and can subsequently be removed.

Van Dalfsen and Okada teach in Claim 6:

A video circuit as claimed in claim 4, wherein an inverse gamma circuit is arranged downstream of the random access memory. (The quanitzer will alter the signals determined from the gamma correction curve and the dequantizer as taught by Okada will adjust the signals in the quantizer.)

6. **Claims 8-12** rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dalfsen et al. (US 2001/0005186 A1) and Kwak et al. (6,166,781) and Zlotnick (US 6,522,784 B1) as applied to claim 3, above, and further in view of Lengyel (US 6,614,428 B1)

Van Dalfsen teaches in Claim 8:

A video circuit ([0005]) as claimed in claim 7, wherein sub-field generation ([0046]) values are applied to a filter ([0046], "error filter 312") via a conversion means ([0046], "addressing unit 308. This unit controls the switching of the cell during the various sub-fields when displaying image."), but

Van Dalfsen and Kwak do not explicitly teach that the circuit has a "dequantization means"

However, in the same field of endeavor, image display, Lengyel teaches "Dequantizer 222 reconstructs the basis coefficients and dequantizer 224 reconstructs the residual." (Column 19, Lines 42-45) Dequantizer 222 is used to convert the altered signal back to the original form.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the dequantizer as taught by Lengyel with Van Dalfsen's display device by implementing the dequantizer after the gamma correction circuit and quantizer with the motivation that "The residual in this case measures the distortion between the transformed base rigid body and the current mesh" (Column 9, Lines 62-64) and "The compressor quantizes and encodes the transformation parameters of the geometric transforms, the base mesh, and residuals. To minimize the distortion of the reconstructed meshes in the decompressor, the compressor computes the residual using quantized/de-quantized transformation and base mesh parameters." (Column 10, Lines 46-50) In order to minimize distortion, the quantized/de-quantized method is used to eliminate the residual.

Van Dalfsen teaches in Claim 9:

A video circuit ([0005]) as claimed in claim 8, wherein the filter applies values to an adder which is situated in an input area of a second signal which represents pixel values of a neighboring line. ([0046], "The difference between the two values, which is the error originating from the quantization, is fed to error filter 312. The output of the filter is added to the value of one or more following pixels, depending on the nature of the filter, by adder 314." The output after the adder represents the pixel value of the neighboring pixel line.)

Van Dalfsen and Lengyel teach in Claim 10:

A video circuit ([0005]) as claimed in claim 7, wherein the sub-field generation means values are applied to the adder via a second conversion means (Van Dalfsen, [0046],

"addressing unit 308. This unit controls the switching of the cell during the various sub-fields when displaying image.") and a second dequantizion means. (Lengyel, Column 19, Lines 42-45, The second dequantizer 224. The combination teaches to use the dequantizion means.)

Van Dalfsen and Kwak teach in Claim 11:

A video circuit ([0005]) as claimed in claim 9, wherein pixel values of the neighboring line are quantized in a further quantization means and sub-fields are generated in a further sub-field generation means (A sub-field generator uses the most significant bits to determine the values in the next sub-field and these bits are quantized in the LUTs), wherein a further random access memory is said further quantization means and said further sub-field generation means. (The combination teaches to use the quantization and sub-field generation means.)

Response to Applicant's Arguments

7. Applicant's arguments considered, but are respectfully moot in grounds of new rejection(s).

Applicant has amended his claim language to include more details on the quantization method. However, respectfully, the limitation that was added is commonly used in the art. It is well known to use the absolute values of the neighboring pixels in the process to determine the quantization error, QE. Zlotnick has been combined with Van Dalfsen and Kwak to teach of this. Whereas Kwak teaches of using quantizing means, Zlotnick explicitly teaches more in depth of how the quantization process works.

Applicant argues that Kwak does not disclose using upper and lower bits in the quantization method, with the LUTs. However, Kwak does teach this in Column 5, Lines 3-26 as noted in the rejection when he discloses two operations to specific upper and lower bits.

Examiner feels the response is complete and the rest of the arguments are moot in grounds of new rejection(s).

Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis P. Joseph whose telephone number is 571-270-1459. The examiner can normally be reached on Monday-Friday, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJ

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